

SHUBHAM BHATNAGAR

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EDUCATION

University of Maryland

Bachelor of Science in Computer Science (Honors)

Minor in Computational Finance

QUEST (Quality Enhancement Systems and Teams) Consulting Honors Program

Expected May 2026

GPA 3.81/4.0

EXPERIENCE

Software Engineering Intern

FDA (U.S. Food and Drug Administration)

June 2024 – Present

Silver Spring, MD

- Engineered a large-scale dataset of 50k+ entries by aggregating data from 10+ diverse sources, reducing inconsistencies by 40% and creating a unified format for advanced machine learning applications.
- Implemented and optimized clustering algorithms using Scikit-learn to analyze complex molecular data, identifying key patterns and relationships to inform future predictive modeling.
- Developed data visualization tools using Matplotlib to analyze and present insights from a 50k+ entry dataset, enabling efficient exploration of multidimensional molecular properties.

Software Development Intern & Researcher

University of Maryland School of Pharmacy

July 2023 – June 2024

Rockville, MD

- Developed a Node.js application integrated with MongoDB, resulting in a fully functional platform with user authentication and real-time content updates.
- Addressed slow database response times by optimizing SQL queries for a public Python-based research database, resulting in a 50% reduction in response time and improved user experience.
- Developed a Python web interface for pharmaceutical model predictions, integrating Google Cloud APIs and Heroku PostgreSQL, streamlining research workflow and reducing processing time by 50%.
- Reduced monthly hosting costs by 20% through migrating the PostgreSQL database from Heroku to AWS, demonstrating adaptability and ongoing commitment to cost optimization.
- Delivered weekly presentations on advanced Machine Learning topics, including Convolutional Neural Networks (CNNs), Decision Trees, and various model training techniques.
- Co-authored "Machine Learning Models to Interrogate Proteomewide Covalent Ligandabilities Directed at Cysteines" (JACS Au, Apr. 2024), advancing novel approaches in drug discovery.

Software Development Assistant

University of Maryland Department of Astronomy

February 2024 – Present

College Park, MD

- Enhanced the NEMO toolbox, a UNIX-based software for stellar dynamics written in C.
- Implemented a shared memory mechanism, enabling sequential program execution and efficient data handling.
- Developed enhancements for the NEMO shell parser, facilitating the definition of environment variables directly through in-line shell statements, decreasing needed commands by 50%.
- Collaborated with a team using Git for version control, ensuring efficient workflow and feature integration.

PROJECTS

ROS Bag Manager | Python, Docker, NGINX, MinIO, Webviz

- Developed a Dockerized application integrating NiceGUI, MinIO, and Webviz for visualizing ROS bag files.
- Configured NGINX for WebSocket support and large file uploads, enhancing system robustness.
- Implemented presigned URLs for secure access to files in MinIO and a user-friendly interface with NiceGUI.

Seat Snatcher | Python, AWS, NiceGUI, BeautifulSoup

- Developed a Python web app using NiceGUI that alerts students when seats for specific courses or sections open, attracting over 50 active users within the first month of launch.
- Stored user requests in AWS DynamoDB, seamlessly integrating front-end and back-end.
- Engineered efficient web scraping using BeautifulSoup 4 to extract and process real-time class availability data.

TECHNICAL SKILLS

Languages: Python, Java, C, SQL, JavaScript, HTML, CSS, MATLAB

Developer Tools: Unix, Linux (Arch), Git, Heroku, Amazon Web Services, Object-Oriented Design

Libraries: React, Node.js, NiceGUI, pandas, NumPy, Matplotlib, BeautifulSoup, OpenCV, PyTorch, Scikit-learn